CEC
CCA
CCE

2024 Operational Plan
Appendix I

PROJECT NAME: Opportunities for Circularity in the North American Electronics Sector. Phase 1.

1. **Project duration: from date to date** (24 months)

2. **Budget (C$)** – $750,000 Canadian dollars (including administrative and operational costs)

3. **Short statement of the issue(s) under this topic, need/gap identified; the project objective(s) and activities to address the issue; and expected outcomes and benefits/beneficiaries (max. 200 words):**

   Electronics have become the world's fastest-growing waste stream, amounting to an estimated 57.4 million tons in 2021.[1] This "waste" stream contains discarded products and raw materials valued at nearly $60 billion globally. McKinsey has signaled that the electronics sector (especially electronic equipment, semiconductors, computers and electronics, and mobile/communications equipment) is likely to see rising demand and larger shifts in production facilities and supply chains driven by regionalization.[2] Increasing circularity for the electronics sector in North America requires better product design, longer use through repair, refurbishment and remanufacturing efforts, and better collection and recycling at end-of-life. Preliminary research on increasing value retention processes in Canada show significant potential for this sector to deliver both socio-economic and environmental benefits (details in ECCC's VRP report).[3] In the United States, multiple lines of federal efforts to enhance electronics circularity also support environmental, economic competitiveness and national security objectives. While in Mexico, circularity research has highlighted the potential of repair practices, as well as the barriers and opportunities in business models and good circular economy practices for the country.[4]

   The electronics sector is being proposed as the focus of this first CEC initiative on Circular Economy because of the high interest from North American consumers.[5,6] In addition, it lends itself well to advance the North American conversation on circularity and raise awareness of circularity and its socio-economic and environmental benefits in this diverse and decentralized region.

[1] Platform for Accelerating the Circular Economy (PACE) Action Agenda for Electronics. 2021.
[2] Doheny, Gomez et al. To regionalize or not? Optimizing North American Supply Chains. McKinsey & Company. 2022.
[3] Socio-economic and environmental study of the Canadian remanufacturing sector and other value-retention processes in the context of a circular economy / prepared for Environment and Climate Change Canada by Oakdene Hollins and Dillon. 2021.
[4] La extensión de tiempo de vida útil en teléfonos celulares en el marco de la economía circular y el cumplimiento de la Contribución Nacionalmente Determinada (CND)/ prepared by the Instituto Nacional de Ecología y Cambio Climático (INECC). 2021.
[5] Côté & Denoncourt. Working Towards Repairable Appliances and Electronics in Canada. Diagnosis, issues and solutions. Équiterre. 2022.

This initiative aims: 1) to study the potential of circularity in the electronics sector in North America, focusing on opportunities related to design, innovation, sustainable production, efficient use of resources, reuse, repair, refurbishment, and remanufacturing, while highlighting "bright spots," case studies, and lessons learned for the economies of Canada, Mexico, and the United States; and 2) to identify opportunities for regional cooperation in the electronics sector and develop practical tools that support the industry, governments and society to advance circularity in each country as well as in the regional supply chain of the sector.

The Design Team suggests that CEC work on Circular Economy should follow a long-term vision, with the initial efforts focused on the electronics sector and delivered in two phases. The first phase (described in this document) will include two components:

1. The development of a research study that will offer relevant context and considerations for the advancement of circularity in the electronics sector of each country, to raise awareness of the concepts and potential benefits of circularity among decision makers across the public and private sectors.
2. Circularity opportunity pathways will outline potential options/opportunities for cooperation in North America toward enhancing the upstream circularity of the electronics sector across the region (through approaches such as design, innovation, reuse, repair, refurbishment, and remanufacturing).

The results of this first phase will provide key input for the conceptualization of a potential follow-up project on Circular Economy, a Phase II of CEC work to be developed with additional resources after the conclusion of Phase I.

[6] Shorthouse. Circular North America: Accelerating the Transition to a Thriving and Resilient Low-carbon Economy /prepared for Environment and Climate Change Canada and the United Nations Environment Programme by The Delphi Group. 2021.

4. **Select the strategic pillar(s) from the 2021–2025 Strategic Plan that the project addresses:**

- ☐ Clean Air, Land and Water
- ☐ Preventing and Reducing Pollution in the Marine Environment
- ☒ Circular Economy and Sustainable Materials Management
- ☐ Shared Ecosystems and Species
- ☒ Resilient Economies and Communities
- ☐ Effective Enforcement of Environmental Laws

5. **Describe how the project uses strategic, cross-cutting approaches in its implementation: Innovative and Effective Solutions and/or Diverse and Inclusive Stakeholder Engagement and Public Participation (including gender and diversity effects and opportunities, and youth) (max. 100 words).**

In collaboration with the Platform to Accelerate Circular Economy (PACE) this initiative aims to use an iterative approach, including stakeholder engagement, co-creation, and co-design throughout the process. To understand the potential of circularity and identify concrete avenues of action to foster circularity at a national and regional scale, this initiative will focus on upstream solutions which are necessary to scale up circularity efforts. Moreover, to increase understanding and raise awareness of circularity in North America, efforts will be made to identify how to raise the collective level of ambition for the countries and region for both public and private sectors.

6. **Explain how the project can achieve more impact through trinational cooperation (max. 100 words):**

This initial work aims to understand the domestic context and potential of each country, with respect to circularity in the electronics sector, as well as to identify key options that will advance circularity at a regional scale. The initiative is a first step in a move towards larger-scale efforts to advance circularity and achieve more sustainable supply chains across our highly integrated economies.

7. **Describe how the project complements, or avoids duplication with, other national or international work (max. 100 words):**

This initiative will build on existing studies on circularity from the three countries, as well as on PACE's Circular Economy Action Agenda on Electronics (see Section 11, Activity 1). In addition, we will work closely with the technical representatives from the

three Parties to avoid duplications and make sure this work complements with the countries' existing efforts and under development or future policies/national plans to advance circularity. Given that globally, most work on circularity has focused on technical or policy research, this work will follow an approach that is genuinely additional, involving multi-stakeholder perspectives and including a shared learning experience with early adopters or local initiatives. Furthermore, learning from similarities as well as from differences will be a key learning component and focus of the programme that can further enhance impact.

8. **Describe how the project engages traditional ecological knowledge (TEK) experts or Tribal/First Nations/Indigenous communities, if applicable (max. 100 words):**

When possible, the initiative will take into account Traditional Ecological Knowledge (TEK) or Indigenous Knowledge Systems that have the potential to be applied to circular economy and opportunities for sustainable material management in the electronics sector. In addition, Indigenous communities or organizations could participate in the proposed workshop and the final dissemination stage of the initiative's outcomes.

9. **Describe how the project engages new audiences or partners, if applicable (max. 100 words):**

The initiative will engage the Platform to Accelerate Circular Economy (PACE) as a lead partner during Activity 1 as well as guiding the next steps of the initiative. Moreover, the initiative has the potential to bring together stakeholders across North America on circularity and the electronics supply chain, and enhance collaborations amongst industry, academia, government organizations and NGOs.

10. **Identify the designated partner agencies or organizations committed to implementing this project, as well as other organizations that could be involved, or benefit from it, including through outreach efforts, collaborations or partnerships (e.g.: federal agencies; other levels of government; academia; NGOs; the private sector; civil society; and youth):**

Lead agencies or organizations	Country
Environment and Climate Change Canada (ECCC)	Canada
US State Department	United States
US Environmental Protection Agency (EPA)	United States
Secretaría de Medio Ambiente y Recursos Naturales (Semarnat)	Mexico

Instituto Nacional de Ecología y Cambio Climático (INECC)	Mexico
Platform to Accelerate Circular Economy (PACE)	International

Other organizations/individuals (if applicable)	Country
Other organizations engaged in circularity or sustainability efforts in the electronics sector or already cooperating with the parties (leveraging preexisting and expertise from their side)	Canada, Mexico and the United States

11. In the following table, describe: the project objective(s) and the activities and subtasks planned to achieve the objective(s); the corresponding outputs, expected results and how they will be measured (performance measures); baselines (if known), and targets by end of the project; and the timeline and budget.

OBJECTIVE 1	To study the potential of circularity in the electronics sector in North America, focusing on opportunities related to design, innovation, sustainable production, efficient use of resources, reuse, repair, refurbishment, and remanufacturing, while highlighting "bright spots," case studies and lessons learned for Canada, the United States and Mexico's economies.
Activity 1 ***Budget C$600,000***	*Through an iterative research and engagement process, develop national assessments of the potential for circularity in the electronics sector of each country and identify opportunities that could foster circularity in North America.*
Output(s)	A **Research Study** on the potential for circularity in the electronics sector in North America, whose design and direction are informed by a **facilitated collaborative workshop**. The research will focus on "bright spots" based on known barriers, best practices and case studies including examples from both inside and outside North America with relevant lessons for a country or the entire region. **Scenarios** for scaling circularity in one value chain, across industries, and at a community or local level. **Circularity Opportunity Pathways** on how to address the identified collaboration and knowledge gaps, which might include, inter-alia, infrastructure, capacities and mechanisms needed to foster circularity. These pathways aim to present upstream opportunities and policy

	options and implementations for Canada, the United States and Mexico's economy, while offering an outline of opportunities/options that could foster circularity with a life cycle perspective of the electronics sector of the region.
Expected results, performance measures	A better understanding of the potential for circularity in the electronics sector at a national and regional level, and the corresponding environmental, economic, and social impacts, resulting from increased circularity in the electronics sector. The identification of potential pathways for circularity which might include actions, infrastructure, incentives, policies, or regulations that can help advance circularity in the electronics sector in the North American region.
Baseline (current status), if known	Some baseline information on circularity and the electronics sector has been gathered in the following reports: • Circular North America: Accelerating the Transition to a Thriving and Resilient Low-carbon Economy (discussion paper and event summary – ECCC and UNEP, May 2021) • Executive summary of the socio-economic and environmental study of the Canadian remanufacturing sector and other value retention processes in the context of circular economy (report prepared for ECCC by Dillon, March 2021) • *La extensión de tiempo de vida útil en teléfonos celulares en el marco de la economía circular y el cumplimiento de la Contribución Nacionalmente Determinada (CND)* (report by INECC, 2021) • *Evaluación del estado actual de la Economía Circular para desarrollar la hoja de ruta para México, Brasil, Uruguay y Chile* (INECC, 2020) • Circular Economy Action Agenda: Electronics (report by PACE in partnership with Accenture, 2021)
Target (by project end)	A research study focused on the potential for circularity in the electronics sector in North America. Circularity Opportunities Pathways with upstream opportunities, policy, and implementation options to address the identified knowledge and collaboration gaps to foster circularity in the

	North American electronics sector.	
Subtask 0	Define a work plan with PACE, the partner organization, to narrow the scope and define next steps for the initiative using an iterative process. This task will involve a series of interviews with selected stakeholders (including the Steering Committee). It will also involve the design and preparation, organization, and facilitation of a small, in-person **design-focused workshop** which will lead to a more detailed plan for the work and provide the foundations for the **Terms of Reference** for the implementation of the initiative.	**When: mid 2024**
Subtask 1.1	Conduct a **broader consultative workshop** with key stakeholders in circularity and the North American electronics sector to identify collaboration and knowledge gaps that need to be tackled to advance circularity in the region.	**When: late 2024–early 2025**
Subtask 1.2	Develop a **fundamental research study** assessing the national and regional potential for circularity, based on known barriers, case studies and best practices on circularity in the electronics sector	**When: early 2025–mid 2025**
Subtask 1.3	Develop a **Circularity Opportunity Pathways document** with upstream opportunities, policy, and implementation options to address the identified gaps to foster circularity in the North American electronics sector.	**When: mid 2025–late 2025**
OBJECTIVE 2	To identify opportunities for regional cooperation in the electronics sector and develop practical tools that support the industry to advance circularity in each country as well as in the regional supply chain of the sector.	
Activity 2 ***Budget C$150,000***	*Prioritize and Develop Options for Regional Cooperation*	
Output(s)	**An iterative process to identify and develop options for regional cooperation**. This process aims to validate the results of the pathways produced in Activity 1 and prioritize avenues for action and regional options/opportunities for cooperation.	

	A draft proposal for Phase II of CEC work on circularity in the North America electronics sector, informed by the results of the first phase of the initiative.	
Expected results, performance measures	Through an iterative process, the CEC and the Steering Committee will revise the proposed pathways and define and implement an action plan for next steps. Outcomes may include: Stakeholders and experts in circularity and the electronics sector from the three countries are aware of the options/opportunities identified in the research study and the circularity opportunity pathways for potential regional collaboration to advance circularity in the electronics sector in North America Concrete avenues of action to advance circularity in the North American electronics sector have been identified. The CEC is informed of future CEC work opportunities that might lead to a follow-up phase of this initiative.	
Baseline (current status), if known	N/A	
Target (by project end)	Conclude a process to identify and develop options for regional cooperation on circularity in the North American electronics sector. Implement one or more of the low-hanging options identified in the Circularity Opportunity Pathways. Identify potential (draft proposal) follow-up CEC work on circularity in the North American electronics sector based on the proposed pathways.	
Subtask 2.1	Review options from the proposed pathways for regional cooperation and define an action plan based on the identified priorities and guidance from the partner organization.	**When: late 2025**

Subtask 2.2	Implement the action plan to tackle specific low-hanging options identified in the proposed pathways as regional priorities. * **This activity is subject to the estimated costs of the identified options/opportunities and the available budget within this initiative.*	**When: early 2026–mid 2026**
Subtask 2.3	Delivery of a proposal for a possible Phase II of CEC work on circular economy for the consideration of the Parties.	**When: mid 2026**

12. Describe post-project expected impacts:

Expected impact (by when: month, year)	SMART performance measure(s)
By late 2026, assessments of the potential for circularity in the North American electronics sector focused on "bright spots" will be developed.	The Parties and involved stakeholders will have better understanding of the potential of circularity at a national and regional level.
By late 2026, decision makers will have circularity opportunity pathways with upstream opportunities, policy, and implementation options to foster circularity in the North American electronics sector.	The Parties and involved stakeholders will have a better understanding of the options, including upstream solutions to scale up circularity efforts in the region.
By late 2026, decision makers will be using the proposed pathways to advance the circular economy in the electronics sector with a life-cycle perspective in the North American region.	The stakeholder group will have an action plan to advance specific upstream solutions to scale up circularity in their countries and the region.

PROJECT NAME: Stimulating Behavioral Changes to Reduce Food Loss and Waste (FLW) in North America and Expanded Promotion and Uptake of Related CEC FLW Resources

1. **Project duration:** 18 months

2. **Budget (C$): 250,000**

   Year 1: C$125,000

   Year 2: C$125,000

3. **Short statement of the issue(s) under this topic, need/gap identified; the project objective(s) and activities to address the issue; and expected outcomes and benefits/beneficiaries.**

Food loss and waste (FLW) is an increasingly important issue in Canada, Mexico and the United States, where close to 170 million tonnes of food produced for human consumption are lost and wasted each year across the food supply chain, including in pre-harvest and consumer sectors.[1] As food and waste biodegrades under anaerobic conditions in landfills, methane, a powerful greenhouse gas (GHG) that is more than 80 times greater than carbon dioxide (CO2) over a 20-year period, is produced. Evidence supports that FLW prevention, reduction and diversion can support timely and meaningful reductions in short-lived climate pollutants, like methane, which contribute to climate change, degrade air quality and threaten human health. FLW is also linked to other adverse environmental and socio-economic impacts, including inefficient use of natural resources, biodiversity loss, food insecurity, and economic losses throughout the food supply chain.

Through past projects, the CEC has developed and promoted content to support FLW reduction activities in North America, including foundational studies, the *Food Matters Action Kit*, and the *Why and How to Measure Food Loss and Waste: A Practical Guide (version 2)* and its accompanying material. Along the way, these projects have included related CEC outreach, promotion, education and awareness-raising activities such as: the youth awareness campaign "*Let's Shrink Food Waste Mountain*" that was piloted in Mérida (Mexico), the Olympic Peninsula (U.S.), and Montreal (Canada), instructional videos, social media campaigns, tri-national CEC webinars, presentations at third-party events, various partnership activities, and translation, printing and shipping of relevant material (kids and youth booklets in Mayan).

[1] Source: CEC Foundational Report Characterization and management of Food Loss and Waste in North America, 2017.

In this context, opportunities exist to continue to support the dissemination and uptake of both new and existing CEC content to help foster FLW reduction across the region.

The CEC Council mandate from June 2023 acknowledged the need to further build upon the success of past CEC FLW projects, and further demonstrate CEC leadership and visibility to support FLW reduction in North America. Given this, the Secretariat was commissioned to undertake a follow-up project with a focus on assisting local policymakers, communities, and other stakeholders on designing and implementing actions and policies to stimulate behavior changes to reduce FLW with support of CEC FLW resources. The project would also allow CEC to address the current momentum by supporting the growing stakeholder demand for CEC leadership and FLW resources (particularly the "Food Matters Action Kit" and the "Practical Guide on Why and How to Measure Food Loss and Waste") and expanding their uptake in North America.

4. Select the strategic pillar(s) from the 2021-2025 Strategic Plan that the project addresses:

- ☒ Clean Air, Land and Water
- ☐ Preventing and Reducing Pollution in the Marine Environment
- ☒ Circular Economy and Sustainable Materials Management
- ☐ Shared Ecosystems and Species
- ☒ Resilient Economies and Communities
- ☐ Effective Enforcement of Environmental Laws

5. Describe how the project uses strategic cross-cutting approaches in its implementation: Innovative and Effective Solutions and/or Diverse and Inclusive Stakeholder Engagement and Public Participation (including gender and diversity effects and opportunities, and youth).

Building on previous CEC FLW projects (ranging from a toolkit for educators and a practical measurement guide for businesses and organizations, to educational videos, topic-focused microsites, and partnerships and collaborations), this follow-up project will enable the CEC to develop a new project and to continue its current momentum and visibility in awareness-raising of FLW issues, promoting related existing CEC products, and developing new CEC products to further support FLW reduction in North America.

The new CEC product to be developed under this project is a Guide for Practitioners[2] on when and how to apply different theories of behavioral change in practice to improve the uptake and effectiveness of programs and other types of public-facing interventions to reduce FLW, which will build and expand upon related work, including related Champions 12.3 guidance.

6. Explain how the project can achieve more impact through tri-national cooperation.

As with the previous CEC FLW projects, trinational cooperation will focus on preventing and reducing FLW in North America. This project offers ongoing opportunities to collaborate with new and existing partners and experts in North American and elsewhere to prevent and reduce FLW. Taking action to prevent and reduce FLW can benefit the "triple bottom line" of businesses, institutions or other organizations by addressing significant social, environmental and economic costs linked to FLW such as operational inefficiencies, supporting efforts to combat food insecurity in communities, and reducing environmental impacts of the waste, including its carbon footprint. Tri-national cooperation helps to leverage limited resources; deliver and promote uptake of new resources and tools; and broaden efforts to educate, raise-awareness, and stimulate behavioral change. The new CEC Guide for Practitioners will contribute to a broader and deeper understanding of theory, methods and practical approaches to promote meaningful and measurable behavior changes to reduce FLW in North America.

7. Describe how the project complements, or avoids duplication with, other national or international work.

Duplication will be avoided by identifying, consolidating and building upon relevant and available existing work from North America and elsewhere (e.g., academic research, studies on behavior insight, best practices, and expert advice). The final product will specifically focus on related approaches and applications that are suitable for North America (recognizing country-specific differences or other special considerations that may exist). For example, existing guides and toolkits do not focus on when and how to apply different types of theories of behavioral change within the core design and delivery of public-facing interventions to prevent and reduce FLW (i.e. it will not duplicate work elsewhere including related Champions 12.3 guidance).

Outreach, awareness-raising and promotional activities will respond to the CEC Council mandate to support stakeholders.

[2] "Practitioner" generally refers to any individual or group of individuals tasked with or involved in designing and implementing public-facing behavior change interventions to reduce FLW at the household and consumer-level, and could include governments, communities, educators, influencers, business and others.

8. Describe how the project engages traditional ecological knowledge (TEK) experts or Tribal/First Nations/Indigenous communities, if applicable.

All people and communities contribute to wasted food in North America. To the extent practicable, knowledge specific to influencing behavior change across different cultures, including Tribal/First Nations/Indigenous communities, and translating material to relevant languages will be considered. Priority will be given to addressing requests from local governments and communities (including indigenous communities) related to the use of CEC FLW resources.

9. Describe how the project engages new audiences or partners, if applicable.

Identifying and assessing when and how to implement and measure various methods and approaches to influence behavior change is a relatively new area of work for the CEC. Opportunities exist to engage with relevant experts and practitioners from each country via webinars, surveys and interviews. Country experts and practitioners will be given an opportunity to shape and influence the content of the guide and review text before finalization and publication.

10. Identify the designated partner agencies or organizations committed to implementing this project, as well as other organizations that could be involved, or benefit from it, including through outreach efforts, collaborations or partnerships (e.g.: federal agencies; other levels of government; academia; NGOs; the private sector; civil society; and youth):

Lead agencies or organizations	Expert	Country
Environment and Climate Change Canada (ECCC)	Michael Vanderpol	Canada
Environment and Climate Change Canada (ECCC)	Ariane Melaven	
Environmental Protection Agency (USEPA)	Alexis Kilbane	United States
Environmental Protection Agency (USEPA)	Maxwell Torney	
Environmental Protection Agency (USEPA)	Claudia Fabiano	
Environmental Protection Agency (USEPA)	Amy DeLorenzo	
Environmental Protection Agency (USEPA)	Kendra Tyler	
Secretaría de Medio Ambiente y Recursos Naturales (Semarnat), *Dirección General de*	Sandra Sabino	

Fomento y Desempeño Urbano Ambiental, Dirección de Gestión Integral de Residuos		Mexico
Secretaría de Medio Ambiente y Recursos Naturales (Semarnat), *Dirección General de Recursos Natuales y Bioseguridad*, *Dirección de Regulación Forestal*	Lydia Meade	

Other organizations/individuals (if applicable)	Country
Consultant/s (as needed)	

11. In the following table, describe: the project objective(s) and the activities and subtasks planned to achieve the objective(s); the corresponding outputs, expected results and how they will be measured (performance measures); baselines (if known), and targets by end of the project; and the timeline and budget.

OBJECTIVE 1	**Assisting local policymakers, communities, and other stakeholders on designing and implementing actions and policies to stimulate behavior changes to reduce FLW with support of CEC FLW resources**
Activity 1 **Budget year 1 and year 2: C$190,000**	**Develop a Guide for Practitioners on when and how to apply different behavior change theories in practice to improve the uptake and effectiveness of programs and other types of public-facing interventions to reduce FLW.** **Budget: Year 1:** C$95,000; **Year 2:** C$95,000
Output(s)	• A practical guide will be established that describes the utility of different theories of behavioral change to improve the design, implementation and effectiveness of programs and other public-facing interventions to reduce FLW. • Specifically, it will provide clear, concise, and informed guidance to Practitioners on when and how to apply different theories of behavioral change in practice, supported by expert advice, related knowledge, and practical examples (note: the guide is not intended to be an academic paper on behavior change). The guide will also include supporting training material and/or content to the extent practicable to facilitate ease of use and uptake by Practitioners.

	• Types of theories of behavioral change to be included in the guide will be informed by North American experts and practitioners on theories of behavioral change and public-facing interventions. Examples of relevant theories, frameworks and models that may have practical utility in reducing FLW include: cognitive/non-cognitive behavior theory; theory of planned behavior; theory of interpersonal behavior; social practice theory; theory of environmentally responsible behavior; nudge theory; gamification; theoretical domains framework; Motivation, Abilities and Opportunities (MOA) framework; and transtheoretical model of behavior change (TTM). • The guide will be showcased at a North American webinar that will be hosted by the CEC. The guide will benefit a broad and diverse group of Practitioners tasked with reducing FLW (e.g., governments, communities, educators, influencers, business) at all types of venues using public-facing interventions. The guide will also include country-specific considerations for influencing behavior change in North America (e.g., language, culture, demographics, etc.).
Expected results, performance measures	• More Practitioners will have the knowledge, skills and training needed to design and implement behavior change programs.
Baseline (current status), if known	• Influencing human behavior change is complex and often not well understood. • Several different theories, frameworks and models have been established by experts in behavior and social sciences, which can be used to improve the uptake and effectiveness of public-facing interventions (e.g., programs, initiatives, challenges, education and awareness-raising campaigns, social marketing, pilots, etc.). • Many Practitioners are not fully aware of the utility of different theories of behavioral change and how to implement them in practice in a meaningful way. • Existing guides and toolkits do not focus on when and how to apply different types of theories of behavioral change within the core design and delivery of public-facing interventions (i.e. it will not duplicate work elsewhere including related Champions 12.3 guidance). • An opportunity exists to fill this gap by working with experts to consolidate existing knowledge, best practices, expert advice, concrete examples and lessons learned to guide when and how to use different types of theories of behavioral change in practice to reduce FLW.
Target (by the end of the project)	• Publish and promote the guide for Practitioners.

Subtask 1.1	Develop a guide for Practitioners that provides guidance on when and how different theories of behavioral change (alone or together) can be applied in practice to improve the uptake and effectiveness of programs and other public-facing interventions to reduce FLW in North America, to be informed by experts in theories of behavioral change and designing behavior change programs and public-facing interventions.	**When**: year 1 and year 2
Activity 2 **Budget year 1 and year 2: C$60,000**	**Continued outreach, promotion, and awareness-raising of CEC products related to FLW reduction.** **Budget year 1:** C$30,000**; year 2:** C$30,000	
Output(s)	• Continued dissemination and use of new and existing CEC FLW content and assist and support stakeholders in the uptake of this content (priority will be given to local governments and communities, including indigenous communities).	
Expected results, performance measures	• Enhance awareness of FLW issues in North America, facilitate dissemination and use of related CEC material to support FLW reduction and address stakeholder demand for assistance in using CEC FLW resources and raising awareness locally.	
Baseline (current status), if known	• Through past projects, the CEC has developed and promoted content to support FLW reduction activities in North America, including foundational studies, the Food Matters Action Kit and a Guide on How and When to Measure FLW. • Following the success of these past CEC FLW projects and awareness-raising focused actions and campaigns, and considering the leadership and visibility achieved, this activity will assist local policymakers, communities, and other stakeholders in designing and implementing actions and policies to stimulate behavior changes to reduce FLW with support of CEC FLW resources. • Opportunities exist to continue to support the dissemination and uptake of both new and existing CEC content to help foster FLW reduction across North America, and thus this project responds to the interest expressed by the stakeholders, allowing the CEC to address the current momentum by supporting the growing demand for CEC leadership and FLW resources.	
Target (by the end of the project)	Ensure interested groups are aware of both new and existing CEC FLW content, and able to access, understand and use this content (e.g. via training, the translation of relevant material, hardcopy materials, etc.).	

Subtask 2.1	Provide editing, translation and other services to support publication and dissemination of CEC relevant products.	**When**: year 1 and year 2
Subtask 2.2	Promote new and existing CEC FLW content via CEC-hosted webinars, workshops and meetings (with simultaneous interpretation as needed), other third-party events, the use of social media as appropriate.	**When**: year 1 and year 2
Subtask 2.3	Ensuring the right support to relevant stakeholders' requests related to the use of CEC FLW resources. Priority will be given to requests from local governments and communities (including indigenous communities).	**When**: year 1 and year 2
Subtask 2.4	Printing and mailing of relevant CEC material upon request.	**When**: year 1 and year 2

12. Describe <u>post-project</u> expected impacts:

Expected impact (by when: month, year)	SMART performance measure(s)
By the end of the project the Guide will have been presented and its use promoted.	The CEC has hosted a final project webinar to present the guide
By the end of the project the CEC will have hosted and participated in a series of webinars and workshops to further promote the FLW related products.	The CEC has hosted and participated at a series of webinars.
By the end of the project the network of existing FLW partners/stakeholders is consolidated, and new ones have been contacted.	Partnerships have been secured and joint action has been undertaken.

Reaching Horizon 2030: an Environmental Outlook for North American Cooperation
Description of the Initiative (2 February 2024)

Budget: (C$) 500,000 (Including operational and administrative costs)
Project duration: 23 months (April 2024 to February 2026)

1. Context

The global community recognizes that we are in a critical decade where meeting 2030 climate change and biodiversity goals is essential to keeping global warming within 1.5°C and addressing biodiversity loss. It is important for the CEC's work to support these international goals, ensuring that North America contributes to global leadership. The initiative *Reaching Horizon 2030: an Environmental Outlook for North American Cooperation* (H-2030) will help ensure that the CEC's work supports trilateral commitments to the Parties' key climate and biodiversity targets including**:**

- tackling the triple planetary crisis of *climate change, pollution and biodiversity loss;*
- keeping North America on the 1.5°C pathway;
- addressing and reducing key climate pollutants;
- helping North America achieve international biodiversity conservation goals (i.e., 30x30, species at risk, financing conservation, etc.); and
- fostering North American leadership on global climate action.

The H-2030 initiative was announced at the 2023 CEC Council Session in Victoria, Canada. In the 2023 Council Statement the three Council members underlined "the importance of promoting collective action to address the triple planetary crisis of climate change, biodiversity loss and pollution."

To help define how CEC action can be most strategic in addressing the triple planetary crisis and supporting international goals, the H-2030 initiative will promote CEC engagement to work with a diverse set of partners, representing the CEC's wide-based key stakeholder groups, including international and regional organizations, academia, the business community, policy institutions, think tanks, thought leaders, civil society, Indigenous peoples, youth, different levels of government and others.

This initiative is aligned with the Strategic Plan 2021–2025's cross-cutting approaches: *Innovative and Effective Solutions* and *Diverse and Inclusive Stakeholder Engagement and Public Participation.*

2. Objective and approach

The CEC's H-2030 initiative will anticipate and prepare for emerging environmental and climate challenges that North America will face from now until 2030 and beyond. Through regional expert engagement and public consultations, the initiative will identify and issue recommendations on how the CEC could contribute to addressing these challenges through its strategies, programs and partnerships. The initiative will also include a set of pilot projects in response to these recommendations.

The H-2030 initiative will be structured around the following three components, or workstreams:

Workstream 1: Climate Change — will help identify emerging priority mitigation and adaptation issues, strategies and actions across the region.
Workstream 2: Pollution — will seek guidance on identifying priority areas and technologies for emissions reduction strategies and actions across the region.
Workstream 3: Biodiversity Loss — will help identify focus issues for biodiversity conservation strategies (in line with the international goals) and actions across the region.

The focus on these three workstreams will help: 1) define the overall direction of the initiative; 2) define the groups of experts who should be involved; 3) give direction to these experts to better articulate their analysis; and 3) develop the main deliverables.

The following cross-cutting themes will also be integrated in each of the workstreams:

- Indigenous Knowledge (IK) /Traditional Ecological Knowledge (TEK): Prioritize, when appropriate, the identification of strategies and actions to ensure the inclusion of Indigenous and Traditional Ecological Knowledge, and engage, and participate in the focus of each workstream.
- Environmental Justice: Identify, when appropriate, the opportunities to advance environmental justice and promote effective community engagement and inclusion in decision making in disadvantaged, Indigenous, or border communities in each of the workstream focuses.
- Subnational governance/action (including cities/urban dimensions): Ensure that identifying opportunities and emerging strategies addresses and considers, when appropriate, the need to engage subnational actors, including local communities, tribes/Indigenous communities, cities and states/provinces.
- Corporate Social Responsibility and Private Sector Engagement: Prioritize workstream considerations of the role and opportunities for the engagement of the private sector and specific private sector-related actors (regulators, associations, etc.) in order to reach 2030 targets.

3. Main deliverables

The H-2030 initiative will assess significant environmental challenges that can be addressed through the CEC, providing critical information and input for the development of the CEC Strategic Plan 2026–2030. The H-2030 report will also serve as a strategic guidance document and data resource for government policy makers, organizations, academia and other key actors in North America and other regions to inform research, policy and action. The following sections describe the main deliverables.

3.1 A network of key environmental actors

The initiative will identify, engage with and establish a roster of diverse environmental actors (including scientists, advocates, private sector representatives, and subnational policy makers) who will bring their expertise and perspectives to help the CEC identify the key trends related to the state of the environment and environmental challenges that North America will face in the coming years, to and beyond 2030.

3.2 The H-2030 Report

The collective analytical work of the experts will feed into the development of a comprehensive H-2030 report which will include: 1) an overarching assessment of key environmental issues, challenges and emerging trends to 2030 (this would build on previous CEC assessments and state of the environment reports); and 2) special sections/chapters providing strategic recommendations outlining concrete actions for the North American region to take by 2030 on three priority topics[1] and as well as potential pilot projects that could be launched, as follows:

- Focus on **Earth Observation Technologies and Other GIS Tools** (Workstream 1: Climate Change)
  This section of the report will identify opportunities for coordinating and collaborating regionally to take advantage of and utilize existing and emerging earth observation technologies and other GIS tools that can map and inventory key climate pollutants and their sources, extreme weather events, air quality alerts, land cover changes, extreme heat, forest fires, and other ecosystem changes, with relevant and timely data, while crossing these with available social data to identify and correlate these trends with disadvantaged communities and their specific vulnerabilities. This would support both mitigation and adaptation efforts by capitalizing on emerging observation technologies to benefit disadvantaged communities while also helping subnational governments promote more robust climate strategies and more effective adaptation and resilience.

- Focus on **Sustainable Transportation** (Workstream 2: Pollution)

[1] Analyses on additional emerging priority topics could be carried out eventually (and as directed by the Parties) contingent on additional funding.

This section of the report will identify strategies and opportunities to advance cleaner, more sustainable transportation: for example, by addressing and reducing contamination along land routes and water bodies, particularly where the concentration of vehicles or vessels and the associated industries are sources of local air pollution.

- Focus on **Ecosystem Services / Sustainable Use and Management of Biodiversity** (Workstream 3: Biodiversity Loss)
  This section of the report will identify opportunities and strategies to implement actions that increase the provision of ecosystem services in the region, including opportunities for improving biodiversity management and strengthening water management across stakeholder groups in North America.

3.3 Pilot projects

The initiative will include the design and launch of two or three pilot projects, guided by expert input, which will serve to initiate and test new collaborative areas of work in line with the three priority topics.

3.4 Engagement activities and outreach resources

A series of consultations, [potentially through the Joint Public Advisory Committee (JPAC) and the Traditional Ecological Knowledge Expert Group (TEKEG)], and webinars will be organized to inform the development of the H-2030 report and disseminate its results**.** The initiative will also produce resources such as brochures, fact sheets and videos.

4. Process

The following process describes how the previous deliverables will be produced and the expected timeline (also see Annex 1 - Process Diagram).

Leading actor(s)	Process	Timeline
Project development		
General Standing Committee	**Action:** Finalize scope of initiative, list of focus issues, process and timeline **Output:** A clear description of the initiative that includes the process, activities, timeline and budget	December 2023–January 2024

<table>
<tr><td>(GSC) - Secretariat</td><td></td><td></td></tr>
<tr><td>Alternate Representatives</td><td>Action: Alt Reps approval of description of the initiative

Output: Final description of initiative</td><td>February 2024</td></tr>
<tr><td colspan="3">Implementation</td></tr>
<tr><td>GSC</td><td>Action: Appointment of Steering Committee experts (ideally two country experts <u>per workstream</u> – i.e., approx. 18 experts in total)

Output: Final list of Steering Committee members for each workstream</td><td>February 2024</td></tr>
<tr><td rowspan="3">Steering Committee-Secretariat</td><td colspan="3">Action: Hold separate meetings to bring onboard Steering Committee experts for each workstream (i.e., involving approx. 6 experts at a time).</td><td rowspan="3">March–April 2024</td></tr>
<tr><td>Climate Change workstream
Lead: Program Head(s)</td><td>Pollution workstream
Lead: Program Head(s)</td><td>Biodiversity workstream
Lead: Program Head(s)</td></tr>
<tr><td colspan="3">Besides separate meetings with each workstream expert, periodic collective meetings with all experts from the three workstreams will serve to coordinate and <u>integrate the cross-cutting themes</u> (described above).</td></tr>
<tr><td>Secretariat-Steering Committee-Consultant</td><td>Project Activity 1. Hiring a consultant and defining network of experts/resources (i.e., Roster of Experts and other relevant governmental and nongovernmental actors)

Activity budget: C$100,000

A consultant will be hired (following TORs agreed to by the SC) to support the entire process, including assisting with drafting/editing the H-2030 report. First, the consultant will work with the Steering Committee and Secretariat to develop the following:

• A detailed workplan (including a timeline for meetings/JPAC consultations/webinars) to ensure relevant and timely input for the H-2030 report</td><td>May-June 2024</td></tr>
</table>

	• Assembling a proposed Roster of Experts and relevant actors who could engage over 7–8 months to assist in the development of the H-2030 report (approx. 18 experts, 6 per workstream, based on criteria and representation) • The Parties will confirm the composition of the Roster of Experts **Output:** Roster of experts and detailed workplan for the development of the H-2030 report #	
	Activity 2. A series of meetings (of the SC and Roster of experts) to provide input for the overall assessment and the three selected topics for the H-2030 report, based on guiding questions. Meetings will also include: • Experts exchanging relevant information on selected topics for H-2030 report • Reviewing progress and challenges to meeting the region's 2030 targets • Recommendations for priority trilateral work in 2026–2030 to meet 2030 targets • Experts discussing the draft H-2030 report The meetings (virtual and hybrid) will include breakout sessions per workstream, as well as other activities to include cross-cutting issues. Between the meetings, the consultant will work with the Secretariat to coordinate the work of the experts within each workstream. JPAC may align its fall public forum with one or more of the topics being explored under the H-2030 initiative, to engage with key actors and consult with the public on these priority issues. JPAC letters of Advice to Council could also be factored into the H-2030 report. **Activity budget:** C$75,000 (*Note that JPAC resources will be leveraged to hold consultations with the public during JPAC fora.*) **Output:** First draft H-2030 report outline	June 2024–February 2025
Secretariat-Steering	**Activity 3.** Develop draft Horizon-2030 report, based on report outline.	February - May 2025

Committee-Consultant	The consultant will be expected to work with the Steering Committee and the Secretariat team to finalize the draft report. **Output:** Draft H-2030 report to inform the development of the Strategic Plan 2026–2030 (to take place from October 2025–May 2026)	
Executive Director	**Action:** Presentation to Council of draft H-2030 report at Council Session 2025, including two or three proposed pilot projects A first draft of the report, with main findings prepared by the consultant, will be presented by the outgoing Executive Director at the 2025 Council Session. **Output:** First draft of the main findings of the H-2030 report will be presented at Council Session 2025.	June 2025
Secretariat-Steering Committee-Consultant	**Activity 4.** Selection and launch by the Council of three pilot projects to test new trilateral work recommended under H-2030 report (ideally one per workstream and in each country; another option is two larger projects) **Activity budget:** C$300,000 Three pilot projects (or two larger pilots) to test one topic under each workstream to be delivered over 18 months **Output:** Two (C$150,000 each) or three (C$100,000 each) pilot projects	June 2025
Secretariat-Steering Committee-Consultant	**Activity 5. Outreach:** Hold webinar (s) and seek other opportunities to disseminate report results Webinars will allow government policy makers and relevant actors in North America to promote the findings so that the document offers strategic guidance for research, targeted and concerted actions, and policy making. CEC participation in other fora can also aid in disseminating the report. *Note: The three focused sections of the H-2030 report could also be disseminated according to the topics. Additional outreach resources (e.g., fact sheets, brochures, videos, etc.) will also be developed to disseminate the report's findings.*	January 2026

	Activity budget: C$25,000 **Output:** Webinar(s) for government policy makers and other relevant actors in North America, as well as development of outreach resources.	

4. Roles and responsibilities for the development and implementation of the Horizon 2030 Initiative

This section is intended to clarify the roles and responsibilities of the variety of actors who will be involved in the development and implementation of the H-2030 initiative to avoid any misunderstanding or duplication.

The **Alternate Representatives**:

- Under this initiative, their responsibilities will include:
    - Selecting the specific topics to be examined under each workstream
    - Approving the description of the initiative
    - Selecting the pilot projects[2]
    - Determining next steps based on the final H-2030 report

- The **General Standing Committee**: For this initiative, their responsibilities will include:
    - Working with the Secretariat in developing the H-2030 initiative
    - Providing regular briefings to the Alt Reps on the development of the initiative and conveying Parties' perspectives and guidance, as needed
    - Confirming the Steering Committee members and the composition of the Roster of Experts

- The **Secretariat:** For this initiative, the responsibility of the Secretariat will include:
    - Working closely with the Alt Reps and the GSC throughout the development process.
    - Coordinating and providing subject and administrative expertise to the Steering Committee to implement, manage and deliver the H-2030 initiative.

[2] It is proposed that the initiative should include the design and launch of selected follow-up pilot projects, to be guided by expert input that would include the promotion of best practices and priority strategies aligned with emerging H-2030 regional priorities.

- Facilitating the development of Terms of Reference for the consultant, who will be hired for the initiative (in collaboration with the Steering Committee).
- The Secretariat team will comprise the following staff:
    - The Executive Director (ED), who heads the Secretariat, will provide high-level perspective for the design and implementation of the initiative.
    - The Director, Government Relations, Strategy and Performance (GRSP), will be responsible for overseeing the H-2030 initiative on the part of the Secretariat, liaising with the Parties, the Secretariat team, and the hired consultant, to ensure a smooth, well-coordinated and timely delivery of the initiative, including a report with recommendations that are consistent with the Parties' guidance and priorities and which can serve as valuable input for the Strategic Plan 2026–2030.
    - The Lead, Planning and Performance (LPP) will act as project lead for the initiative and provide support to the Director, GRSP. The LPP will monitor implementation and flag any issues arising during it; coordinate the consultant services procurement process and oversee the consultant's work; provide updates to the Steering Committee and Roster of Experts, and seek input and provide guidance to them, as appropriate; and coordinate and facilitate virtual and in-person meetings. The LPP will also organize webinars and work with the Communications and Outreach and Partnerships Units to promote findings and seek other fora to disseminate the final report.
    - The three Program Heads will each be responsible for one workstream. Thus they will work with their workstream's Steering Committee as well as members of the Roster of Experts, whose expertise is relevant to the workstream.
    - The Head of Unit, Advisory Groups and Private Sector Engagement will work with JPAC and the TEKEG to explore aligning their activities and public consultations with this initiative, and will support the engagement of relevant private and social sector actors to provide input from the different groups that they represent.

- The **Joint Public Advisory Committee** (JPAC), in support of this initiative, could align its public fora with the topics being examined under the H-2030 initiative, in order to engage with key actors and consult with the public on these priority issues. JPAC Advice and recommendations stemming from these fora will then be considered for the H-2030 report.

- Project **Steering Committee** (SC) members provide expert advice to the Council, share information and knowledge to develop trilateral projects, inform on national context and developments and plan and review project deliverables.[3]
  For this initiative, the SC will be composed of policy and technical experts (ideally two country experts per workstream – i.e., approx.18 experts in total) and their responsibilities throughout the implementation will include, among others:
    - Working with the Secretariat to define the TORs for hiring a consultant
    - Assembling a proposed Roster of Experts (with the support of a consultant)

[3] Information taken from CEC´s *Background and Guidelines for CEC Expert Committees* introductory presentation to Design Teams and Steering Committees.

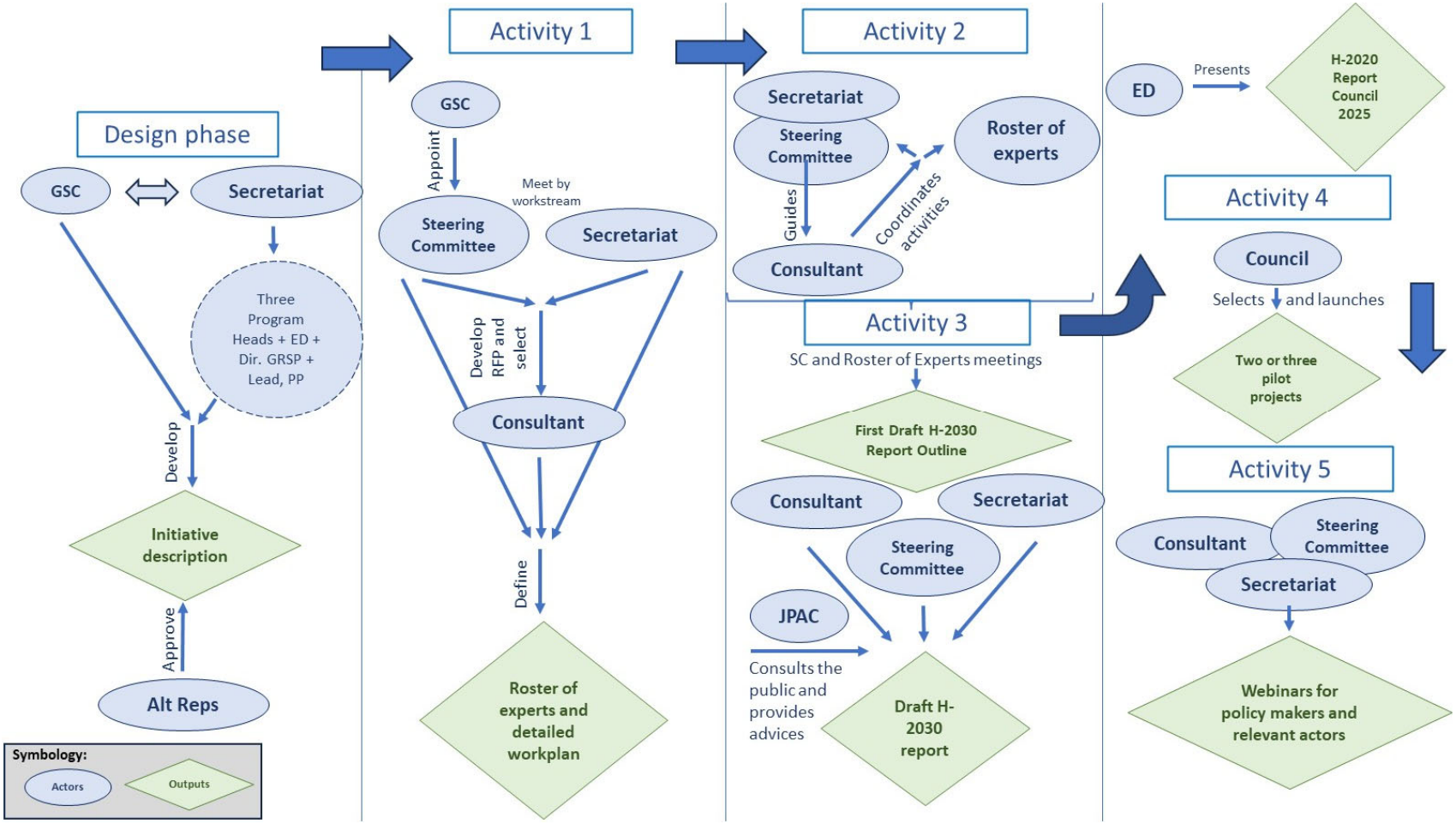
- Providing guidance on the development of each of the workstreams for the overarching assessment
- Ensuring the integration of the cross-cutting issues
- Supporting the implementation of the initiative (incl. reviewing the deliverables)
- Helping define the three potential pilot projects

The 18 steering committee members will be divided into **three groups of 6 experts** each (one group per workstream) and work to advance the development of each workstream. A few periodic collective meetings that include all 18 experts will be organized to exchange and coordinate as well as integrate the cross-cutting themes.

- A **Roster of Experts** can be tapped to provide specific expert advice on the selected topics during the implementation of the initiative. The Roster will include a diverse array of nongovernmental experts (e.g., from academia, advocacy groups, NGOs, or industry), totaling approximately 18 experts, 6 per workstream, and based on criteria and representation. The Roster will be expected to remain available for consultation and advice over a period of 7-8 months to inform and/or contribute to the development of the H-2030 report (terms of engagement to be developed).

- A **Consultant** will be hired to support and work with the Secretariat team and the appointed experts in the development of the many deliverables under this initiative (*e.g.,* workplan, Roster of Experts, draft H-2030 report, and definition of pilot projects).

Annex 1. Process Diagram for H-2030



PROJECT NAME: Scoping Project on a North American Center for Informed Substitution

1. **Project duration:** 6 to 12 months

2. **Budget (C$):** 50,000

3. **Short statement of the issue(s) under this topic, need/gap identified; the project objective(s) and activities to address the issue; and expected outcomes and benefits/beneficiaries (max. 200 words):**

   Chemicals are essential for the production of many goods; thousands of substances are used and emerge as industry responds to consumers demands. Traditionally, chemical risk evaluation and subsequent risk management have been used to control exposure levels or restrict the use of highly toxic chemicals of concern. The transition to safer chemicals fundamentally challenges conventional economic drivers in consumption, because it places human and environmental health as the central priority for innovation. Informed substitution (IS) involves the assessment and comparison of chemical alternatives, incorporating information on hazards, technical functionality, exposure, and economic assessments. This transdisciplinary approach requires a high level of collaboration among industry, regulatory agencies, and academia, as well as other stakeholders. It is often unclear who should lead such collaborations. Indeed, various parties can even lack the necessary knowledge, resources, or motivation to initiate and manage the work. The goal of this project is to scope out the feasibility for establishing a trinational Center for Informed Substitution (CIS) and provide a roadmap for facilitating knowledge sharing, promoting best practices, and fostering the implementation of chemical alternatives assessment and informed substitution across North America.

4. **Select the strategic pillar(s) from the 2021–2025 Strategic Plan that the project addresses:**
   - ☒ Clean Air, Land and Water
   - ☐ Preventing and Reducing Pollution in the Marine Environment
   - ☒ Circular Economy and Sustainable Materials Management
   - ☐ Shared Ecosystems and Species
   - ☐ Resilient Economies and Communities
   - ☐ Effective Enforcement of Environmental Laws

5. **Describe how the project uses strategic cross-cutting approaches in its implementation: Innovative and Effective Solutions and/or Diverse and Inclusive Stakeholder Engagement and Public Participation (including gender and diversity effects and opportunities, and youth) (max 100 words):**
   Following precautionary and preventive principles, informed substitution assessments focus on safer alternatives to avoid potential health and environmental risks. Access to a reliable source of up-to-date technical information can provide a groundwork for fostering innovation and prevent the use of regrettable substitutes, which occurs when a chemical of concern is substituted for one just as or potentially harmful or of unknown health and environmental risks. The creation of the North American CIS could catalyze change in production paradigms; the collaboration of academia, industry, and governments could, in the long run, benefit companies, trade, consumers, and the environment.

6. **Explain how the project can achieve more impact through trinational cooperation (max 100 words):**
   Products containing or created from an array of different chemical formulations move daily across North American borders. Capacity, priorities, and policies related to chemicals of concern differ in Canada, Mexico and the United States. However, given the technical demand for substitution assessments, the three countries can utilize existing, perhaps little-known or not widely available knowledge, systematizing and harmonizing ongoing and future research, resources, and best practices and make the information comparable and available. Beyond these benefits, access to information will allow industry to have common ground to respond to emerging, more strict chemical regulations. In addition, the CIS can promote trust and competitiveness in North American businesses and markets, fostering the adoption of green chemistry and avoid cases of unwise substitution.

7. **Describe how the project complements, or avoids duplication with, other national or international work (max 100 words):**
   Several initiatives have been developed to follow up on existing assessment frameworks, such as the OECD Substitution and Alternatives Assessment Toolbox, the US EPA Safer Choice Program, and the combined government discussion paper and science committee report on IS by Health Canada and ECCC. Lowell Center for Sustainable Production has been a key player in the Association for the Advancement of Alternatives Assessment and the Sustainable Chemistry Federal Landscape Report to Congress. Beyond the region; the EU Parliament announced a substitution center pilot, and the recent development of a Global Framework on Chemicals that promotes the identification of safer alternatives. The proposed project will build upon synergies with these efforts as it assesses the establishment of a North American CIS.

8. **Describe how the project engages experts in traditional ecological knowledge (TEK) or Tribal/First Nations/Indigenous communities, if applicable (max 100 words):**

Involvement of experts in traditional ecological knowledge is not specifically considered for the scoping stage of the initiative. Nevertheless, should the CIS be stablished, it will aim to actively involve a broad range of participants to include a holistic approach to the evaluation of chemical alternatives.

9. Describe how the project engages new audiences or partners, if applicable (max 100 words):

Scoping results from the project can be shared to foster future potential partnerships amongst industry sectors, government authorities, subject matter experts, and NGOs.

10. Identify the designated partner agencies or organizations committed to implementing this project, as well as other organizations that could be involved, or benefit from it, including through outreach efforts, collaborations or partnerships (e.g., federal agencies, other levels of government, academia, NGOs, the private sector, civil society, and youth):

Lead agencies or organizations	Country
Environment and Climate Change Canada, Environmental Protection Branch, Chemical Production and Products Division	Canada
Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention	United States
Dirección General de Gestión Integral de Materiales y Actividades Riesgosas (DGGIMAR) – Semarnat	Mexico

Other organizations/individuals (if applicable)	Country
Lowell Center for Sustainable Production	United States
Instituto Nacional de Ecología y Cambio Climático – INECC (Semarnat)	Mexico

11. In the following table, describe: the project objective(s) and the activities and subtasks planned to achieve the objective(s); the corresponding outputs, expected results and how they will be measured (performance measures); baselines (if known), and targets by end of the project; and the timeline and budget.

OBJECTIVE 1	**Develop a workplan to pilot a North American Center for Informed Substitution (CIS) to foster the implementation of alternatives chemical assessment and informed substitution**
Activity 1 **Budget: C$50,000**	Develop a workplan for piloting a North American CIS.
Output(s)	• High-level review of current global Informed substitution (IS) assessment frameworks and governance mechanisms • Identify key resources, actors, sectors, and networks currently working on IS assessments • Workplan for a North American Center for informed substitution pilot
Expected results, performance measures	The scoping initiative will provide a common understanding of the regional capacity to support a CIS and will provide potential roadmaps for establishing such a North American CIS and facilitating knowledge sharing.
Baseline (current status), if known	ECCC has undertaken previous work under the Chemicals Management Plan (CMP) priorities. Along with Lowell Center for Sustainable Production, they have assessed the feasibility of establishing a Canadian national centre of excellence in IS. This work could be used as a reference for understanding alignment and synergies with Mexican and US chemical agendas. In the case of Canada, there is special interest in following up these efforts and in addressing a group of chemicals of trinational concern, such as perfluoroalkyl and polyfluoroalkyl substances (PFASs). As part of the consultation exercise with companies and governments involved in the CEC's Advancing Supply Chain Transparency (SCT) for Chemicals in Consumer Products, participants were asked what use they made of the chemical information they receive from suppliers. Some 97% of industry participants reported that the main use is to ensure regulatory compliance and chemical safety. However, half of them specified that they currently use the information to prioritize substitution and innovation, and they specified the need for more information on possible chemical alternatives.

Target (by project end)	Inform the necessary steps to establish and pilot a trinational CIS to catalyze the adoption of safer chemical alternatives.	
Subtask 1.1	Develop a conceptual framework to compare potential implementation models that could be pilot to stablish a North American CIS. The analysis will contain a high-level review on current IS assessment frameworks globally and in North America, including governance mechanisms that currently support its Implementation and systematize: 1. Relevant key resources, actors, sectors, and networks currently working on chemical innovation in the three countries, or in other regions that could be considered operational examples for a future CIS. 2. Identify early potential beneficiaries for the establishment of a North American CIS. 3. Common chemical priorities on IS in the region with high commercial trade and chemicals of concern due to their risks to health and the environment. 4. Available tools and information sources and existing criteria to identify safer chemicals.	**When: May 2024**
Subtask 1.2	Convene a work group of previously identified (Subtask 1.1) industry, academics, NGOs, and government experts to obtain feedback to complement the review in Subtask 1.1. The working session should be designed to discuss: 1. The feasibility and interest of establishing a center for informed substitution from a public, academic, and private sector perspective in the region. 2. Discuss roadmaps for implementation developed in Subtask 1.1. and understand their challenges, including financial support, trust, credibility, patent rights and confidential information, etc. 3. Select most viable roadmap and define short, mid, and long-term objectives of a North American CIS along with concise activities which the Center could focus its efforts in a pilot stage. 4. Gather recommendations and obtain proposals on substance specific potential pilot projects to implement in the region.	**When: October 2024**

Subtask 1.3	Compile information and provide a work plan based on a targeted group of chemicals of common interest towards piloting a North American CIS.	**When: February 2025**

PROJECT NAME: Community-led Environmental Education Initiative for Biocultural Heritage Protection

1. **Project duration:** 30 months

2. **Budget (C$)** 1,000,000.00 (Including operational and administrative costs)

3. **Short statement of the issue(s) under this topic, need/gap identified; the project objective(s) and activities to address the issue; and expected outcomes and benefits/beneficiaries (max. 200 words):**

North America grapples with diverse socio-environmental and economic challenges stemming from ecosystem degradation and climate change, which disproportionately affect under-resourced and underrepresented communities such as Indigenous and minority populations, among others. Addressing these issues requires a comprehensive, multidimensional approach, recognizing the economic, ecological, cultural, social, and political[1] diversity across regions. Evidence shows that lasting solutions emerge at the local level.

This initiative aims to develop and test an Environmental Education Framework that fosters reciprocal exchange between diverse knowledges (including but not limited to Traditional Ecological Knowledge (TEK)/Indigenous Knowledge (IK), and academic knowledge) empowering systemically vulnerable communities to tackle challenges related to ecosystem conservation and climate action. This framework will use the principles and practices of knowledge dialogue[2] and education via a focus on biocultural heritage protection, targeting local community engagement. Three pilot projects, one per country, will provide young leaders between 18 and 30 years old with further tools in effective engagement, participatory processes, and community-led projects (e.g., joint fact-finding, participatory mapping, cultural mediation, community action planning) through an intergenerational participatory approach. On the whole, this initiative will enhance community social resilience to foster environmental stewardship and network-building within and across communities.

[1] http://www.cec.org/topics/pollutants/reducing-emissions-from-transportation/We understand as political context a community's local powers, both formal and factual, that have an impact on the use and management of the common natural resources.

[2] Knowledge dialogue is a communication process between diverse groups, integrating research and education, enhancing underrepresented groups' participation, linking science and everyday knowledge, particularly regarding environmental inquiry (adapted from Anderson et al., 2015 & Bastidas et al., 2019).

4. **Select the strategic pillar(s) from the 2021-2025 Strategic Plan that the project addresses:**

- ☐ Clean Air, Land and Water
- ☐ Preventing and Reducing Pollution in the Marine Environment
- ☐ Circular Economy and Sustainable Materials Management
- ☒ Shared Ecosystems and Species
- ☒ Resilient Economies and Communities
- ☐ Effective Enforcement of Environmental Laws

5. **Describe how the project uses strategic cross-cutting approaches in its implementation: Innovative and Effective Solutions and/or Diverse and Inclusive Stakeholder Engagement and Public Participation (including gender and diversity effects and opportunities, and youth) (max 100 words).**

This initiative uses crosscutting approaches by engaging experts, including local and regional ones from the three North American countries to address problems holistically, combining TEK/IK with local expertise and academic knowledge to devise solutions for environmental, social, and economic problems. In this particular context and throughout the duration of the project as well as in subsequent phases, all appropriate measures will need to be in place to protect Indigenous knowledge. This will be achieved through the development of an Environmental Education Framework that includes content – knowledge of environmental, economic, and social issues – as well as a process involving community engagement, collaboration with local entities and facilitation of participatory processes in a spirit of transparency structured in the context of open science principles (e.g., joint fact finding, participatory mapping and research, cultural mediation, citizen science, etc.). The goal of the framework is to support and advance community-led conservation and climate action work.

6. **Explain how the project can achieve more impact through tri-national cooperation (max 100 words):**

Trinational cooperation in this initiative has the potential of harnessing the strengths of Canada, Mexico, and the United States cultural diversity towards common objectives, leading to more impactful solutions to global challenges. In addition, cooperation between the three countries permits designing an Environmental Education Framework that includes different education systems and adds TEK/IK and local knowledge, providing a thoughtful and well-rounded education in environmental and community leadership for future leaders in all three countries. Moreover, trinational cooperation adds value by supporting the deployment of

local and community-based solutions to solve the triple planetary crisis (i.e., climate change, pollution, and biodiversity loss) in areas with highly diverse and contrasting cultural backgrounds, while maintaining common overarching education goals. Finally, this work can serve as an example of how countries can work together to solve environmental, social, and economic problems using environmental education.

7. **Describe how the project complements, or avoids duplication with, other national or international work (max 100 words):**

The initiative will avoid duplication by partnering with TEK/IK keepers, technical experts in environmental education, and/or knowledge dialogue processes (defined in footnote 2, page 1) at local, national, and international levels in all three countries. To the extent of possible, the initiative will consider and will build on past and ongoing environmental education efforts relevant to the proposed work. Moreover, this initiative aligns with global efforts to involve youth actively in addressing environmental, social, and economic challenges, with a focus on environmental and climate justice, intergenerational equity, and workforce development for youth in underrepresented and systemically vulnerable communities.

8. **Describe how the project engages traditional ecological knowledge/Indigenous knowledge (TEK/IK) experts or Tribal/First Nations/Indigenous communities, if applicable (max 100 words)**

This Trinational Environmental Education Initiative can play out in many ways, including by identifying strategies and practical solutions/opportunities; respecting and leveraging cultural diversity; engaging intergenerational learning; harnessing existing traditional biocultural knowledge; and advancing evidence-informed pedagogies. To achieve these goals, the Environmental Education Framework will be designed in close and meaningful collaboration with Indigenous and local partners from the three countries. Moreover, this initiative will incorporate diverse knowledges including Indigenous, Traditional Ecological, and academic. The goal is to foster the capacity for collective action to address community ecosystem conservation and climate change that is grounded in the principles and practices of knowledge dialogue and education.

9. **Describe how the project engages new audiences or partners, if applicable (max 100 words):**

The initiative will engage different sectors from North America by bringing together communities, Indigenous partners, local entities, groups and organisations from the environment and education sectors, as well as different levels of government to share experiences, to collaboratively identify different interests and needs, and jointly design and implement solutions to tackle environmental and climate challenges. In this context, the initiative will create opportunities for discussions and exchange, the

development of pilot projects as well as opportunities to create partnerships amongst communities, different levels of government from the environment and education sectors, academia, and NGOs across North America.

10. Identify the designated partner agencies or organizations committed to implementing this project, as well as other organizations that could be involved, or benefit from it, including through outreach efforts, collaborations or partnerships (e.g.: federal agencies; other levels of government; academia; NGOs; the private sector; civil society; and youth):

Lead agencies or organizations	Country
Unidad Coordinadora de Asuntos Internacionales de la Secretaría de Medio Ambiente y Recursos Naturales (UCAI-SEMARNAT)	Mexico
Dirección General de Recursos Naturales y Bioseguridad de la Secretaría de Medio Ambiente y Recursos Naturales (DGRNB - SEMARNAT)	Mexico
Centro de Educación y Capacitación para el Desarrollo Sustentable de la Secretaría de Medio Ambiente y Recursos Naturales (CECADESU-SEMARNAT)	Mexico
U.S. Environmental Protection Agency (EPA)	United States
U.S. Department of Agriculture Forest Service (FS-USDA)	United States
National Park Service (NPS)	United States
Environment and Climate Change Canada (ECCC)	Canada

Other organizations/individuals (if applicable)	Country
Dirección General de Agroecología y Patrimonio Biocultural de la Secretaría de Medio Ambiente y Recursos Naturales (DGAPB-SEMARNAT)	Mexico
Comisión Nacional de Áreas Naturales Protegidas (CONANP)	Mexico
Instituto Nacional de Pueblos Indígenas (INPI)	Mexico
Junta Intermunicipal Biocultural del Puuc	Mexico

NOAA, NAAEE or specifically the Project Director for the Guidelines Project who is familiar with all the EE Guidelines and the work that the Kettering Foundation is doing with democracy and communities	United States
Cornell University, Department of City and Regional Planning	United States
Indigenous-led and local organizations which will be further defined once the locations for the pilot projects are identified	Canada, United States and Mexico
International NGOs	Canada, United States and Mexico

11. In the following table, describe: the project objective(s) and the activities and subtasks planned to achieve the objective(s); the corresponding outputs, expected results and how they will be measured (performance measures); baselines (if known), and targets by end of the project; and the timeline and budget.

OBJECTIVE 1	**Design of the Environmental Education Framework**
Activity 1 **Budget $180,000 CAD**	***Define the Environmental Education Framework document which should include the "Community Learning" strategy.***
Output(s)	• **An initial document with the Environmental Education Framework** that can be implemented with systemically vulnerable communities to strengthen their capacity to tackle challenges related to ecosystem conservation and climate action through practical skills/trainings that can be directly applied to address local environmental issues. This document will be a first version of the Environmental Education Framework (Version 1.0) describing its goals, core curriculum and the "Community learning" strategy. For this initiative, "Community learning" can be understood as the strategy used to bring together environmental education content from diverse knowledge, including TEK/IK, and academic knowledge. This strategy aims to help put together a curriculum that supports youth to lead participatory processes and facilitate the implementation of community climate action or ecosystem conservation work through diverse knowledges.

	The document should also include: - **General considerations:** Vision and goals of the framework, core concepts, learning outcomes, integration across disciplines, and applicability in a trinational/international context, among other key elements that shape the framework. - **Core curriculum:** the syllabus of the framework, that is the educational content or recommended better practices that will guide and support youth to facilitate and implement conservation and climate work in their communities. - **Implementation methodology:** a proposed process or workplan (steps that should be followed) to implement the Environmental Education Framework in a selected community. - **Criteria for selection, engagement, and participation of community leaders:** the Environmental Education Framework will set criteria and methodology for the selection of future community potential leaders (youth from 18 to 30 years old). - **Evaluation criteria:** the criteria that will be used to measure the success of the project, such as key performance indicators or participatory evaluation methods. The periodicity for each evaluation will also be defined. - **Management aspects:** financial information, required institutional agreements and potential partners. - **Trilateral experience sharing:** the Environmental Education Framework should include mechanisms for iterative sharing between youth implementing conservation or climate action projects in the three countries. - **Other information:** defined by the Design Team and/or Steering Committee.

	• **A strategy for the pilot tests**. This should include the criteria for the selection of the participating communities (e.g., urban, peri-urban, or rural or both, what size, etc.), as well as an exit strategy from the consultant for each pilot.
Expected results, performance measures	• **An initial Environmental Education Framework** (Version 1.0) focused on engaging diverse knowledges to foster community for collective action and capacity to address community ecosystem conservation and climate action, while addressing local economic and socioenvironmental challenges. This framework will be designed by the consultant(s) making sure diverse perspectives and knowledges are taken into account. This document will work as a baseline and will be tailored with and by communities in Activity 2. The development of this framework will provide the selected community potential leaders with the tools and knowledge to act as catalysts for change to facilitate a community-led process while helping the communities become more resilient to the effects of ecosystem degradation and climate change. • **A community learning implementation strategy**: Create a high-level, skill-building, learning implementation strategy to support youth to develop the capacities to facilitate the implementation of community climate action or ecosystem conservation, through an intergenerational participatory approach. • **A strategy for pilot testing**: Design the strategy that the pilots should follow in Activity 2. This should include the criteria for the selection of the participating communities in the pilot projects, as well as a pilot pitch that is succinct, clear, and accessible to communicate to the communities what the project is about and help them decide if they want to collaborate in the initiative.
Baseline (current status), if known	N/A
Target (by project end)	An initial Environmental Education Framework completed (Version 1.0)

Sub-task 1.1	With the support of a consultant(s) managed by the Secretariat and the guidance and supervision of the Steering Committee, define and design an initial version of the Environmental Education Framework (Version 1.0) that integrates the action plan, core curriculum, the "community learning" implementation strategy template and define the criteria for the selection of youth partners as well as the evaluation criteria to measure the progress of the project.	**When:** Year 1
Sub-task 1.2	Design a strategy for pilot testing which will be implemented in the Activity 2. This will include the criteria for the selection of the communities where the pilots will be implemented.	**When:** Year 1
OBJECTIVE 2	**Piloting of the Environmental Education Program Framework**	
Activity 2 Budget $600,000 CAD	***Implement pilot testing – one community per country***	
Output(s)	• **Three pilot projects** will be implemented. Each pilot project will be conducted in one community per country. To do so, the Secretariat and the Steering Committee, which includes representatives from the CEC TEK group, will identify communities that want to collaborate in the initiative and become the pilot communities. The identification and selection of communities will be based on the strategy and criteria set on Activity 1. • **A collaboration agreement** with the three pilot communities will be convened. In addition, a collaboration strategy, and a protocol for sharing TEK/IK will be generated with the selected communities. This will include discussions on Indigenous data sovereignty and the protection of TEK/IK. The Environmental Education Framework will be pilot tested in each of the selected communities to provide selected young partners between 18 and 30 years old with further tools in effective engagement, participatory processes, and community-led projects to address a climate action or ecosystem conservation issue particularly relevant to that community. During each pilot project the framework will be first reviewed with the communities to complement it with the community's own knowledge, education systems and youth-focused initiatives and adapt it to the particularities of the	

	specific community, and periodically evaluated as defined in the framework. The implementation of the pilot projects will include iterative sharing between the youth leading the implementation of the projects, and an intergenerational participatory approach in the three countries. As part of this iterative process, a specific curriculum, complementary to the core curriculum, will be designed with and by the communities according to their needs.	
Expected results, performance measures	• **Selected youth partners** have the capacity to use environmental education and traditional biocultural knowledge to work collaboratively within communities. • **An iterative sharing between youth partners** leading the implementation of the projects in the three countries. • **A community of practice** to share challenges and lessons learned. During these pilots, communities will select their own youth partners who will be using similar implementation strategies to foster community knowledge dialogues around local issues of environmental protection. These same youth in collaboration with other community leaders will apply their new/strengthened capacities to facilitate community-led work to address a local climate or conservation-related issue in their communities. • **Three activity reports** will be produced (one for each pilot) documenting the pilot-testing effort and lessons learned.	
Baseline (current status), if known	N/A	
Target (by project end)	Three activity reports (one per pilot). A draft of challenges and lessons learned as well as reflective feedback from projects to inform the next steps of the work. A community of practice to share challenges and lessons learned on conservation and climate action.	
Sub-task 2.1	The selection of three communities to collaborate with, one per country.	**When:** Year 1 & 2

Sub-task 2.2	For each selected community, identify key community members to join other experts and create a Community Design Group to review, design, and adapt the Environmental Education Framework to the specific conditions of the community.	**When:** Year 1 & 2
Sub-task 2.3	For each selected community, following the guidance of the community leaders, the Community Design Group will select the youth partners that will participate on the capacity building focused on the core and specific curriculum and will work with their communities to undertake the specific activities to address the climate action or ecosystem conservation issue of their community.	**When:** Year 2
Sub-task 2.4	For each community, the Community Design Group and the selected youth partners identify the climate action or ecosystem conservation issue that needs to be addressed in the community. The Community Design Group develops the specific curriculum for that community.	**When:** Year 2
Sub-task 2.5	For each selected community, the training of the selected youth partners takes place. A community action plan to address the specific issue of the community is developed.	**When:** Year 2
Sub-task 2.6	For each selected community, the trained youth partners work with their communities to address the climate action or ecosystem conservation issue identified for their community by following the action plan.	**When:** Year 2
Sub-task 2.7	For each selected community, an activity report will be produced (one per pilot) to document the experience and lessons learned.	**When:** Year 2
OBJECTIVE 3	**Conclusions, Version 2.0 of Environmental Education Framework, Scale-up and lessons learned**	
Activity 3 Budget $220,000 CAD	***Intercommunity knowledge sharing workshop and final report/brief***	
Output(s)	• **An Intercommunity knowledge sharing workshop** will be organized with selected communities from the three countries, so they can share and learn from others' experiences during the implementation of the pilot projects.	

	• **A Version 2.0 of the Environmental Education Framework**. The framework will be revised and complemented based on the results of the pilot projects and the intercommunity workshop. This document seeks to be flexible enough so it can be adapted to other contexts and used by other communities across North America. • **A final report** will include the final revised version of the Environmental Education Framework (Version 2.0), the results from the intercommunity knowledge sharing workshop and pilot projects, recommendations to ensure the sustainability of the initiative (for example, mechanisms for community planning, and financing or self-financing) and its future replicability. In addition, this document will include a synthesis of lessons learned and principles for spreading work into other communities in North America, which might include an adaptive implementation plan to facilitate the use of the framework by other communities.
Expected results, performance measures	• **An inter-community network:** Promote shared learning and networking between the selected communities from the three countries to learn and share thinking as work unfolds. This will include documentation and storytelling of the work in each community to ensure it can be communicated more broadly. • **Community networks** with the capacity to share lessons and challenges among and between communities. • **Pilot-tested examples** of how this work can be done for other communities wishing to engage in such efforts. • **Final report**, pilot projects, and recommendations for spreading of work to other communities.
Baseline (current status), if known	N/A
Target (by project end)	An inter-community network working on community-led ecosystem conservation and climate action. Version 2.0 of the Environmental Education Framework.

	A final report including a revised Environmental Education Framework, an adaptive implementation plan and case studies (pilot projects).	
Sub-task 3.1	Intercommunity knowledge sharing workshop.	**When:** Year 3
Sub-task 3.2	A revised Environmental Education Framework (Version 2.0).	**When:** Year 3
Sub-task 3.3	A final report including the revised Environmental Education Framework (Version 2.0), an adaptive implementation plan and pilot projects.	**When:** Year 3

12. Describe <u>post-project</u> expected impacts:

Expected impact (by when: month, year)	SMART performance measure(s)
By late 2026, youth in systemically vulnerable communities will have the capacity to lead and facilitate ecosystem conservation and climate action work in their communities.	Number of potential leaders that participated on the capacity-building using the Environmental Education Framework. Evidence based on surveys that youth in the participant communities have: - strengthened their capacities to lead community-based environmental work, - increased their involvement in conservation or climate action work in their communities.
By late 2026, three systemically vulnerable communities participating in the pilot project will be testing the Environmental Education Framework to tackle local environmental challenges.	Number of communities engaged in the region. Evidence based on surveys that communities: - are using the framework to build capacity among youth and tackle environmental local issues. - perceive that environmental governance has been strengthened through the implementation of the framework.

By late 2026, a final Environmental Education Framework incorporating diverse knowledges will provide the Parties and systemically vulnerable communities with tools to increase community's resilience to climate change and conduct community-based ecosystem conservation and climate action work.	Stakeholder perception (i.e., community representatives, Indigenous, youth and local collaborators), before (as a baseline) and after the implementation of the initiative, relative to: - incorporation of diverse knowledges, - efficiency of the framework, - use of the framework, - replicability of the framework's content.

PROJECT NAME: Fast Mitigation Strategies for Short-Lived Climate Pollutants

1. **Project duration:** 12 - 18 months

2. **Budget:** C$400,000 (Including operational and administrative costs)

3. **Short statement of the issue(s) under this topic, need/gap identified; the project objective(s) and activities to address the issue; and expected outcomes and benefits/beneficiaries (max. 200 words):**
   Reducing methane emissions is crucial for quickly slowing global warming and preventing temperatures from exceeding 1.5 °C above pre-industrial levels. Major methane emission sources associated with human activities include the oil and gas, agriculture, and waste sectors. Reported emission inventories in North America have a degree of uncertainty, as demonstrated by studies that show considerable variability between reported inventories and estimates based on monitoring.[1] Accurate emissions inventories are essential to effectively track progress on mitigation efforts and for closing emission gaps.

   Advancements in remote methane detection technologies provide an opportunity to improve emissions inventories. This project aims to develop recommendations for improved methane quantification, measurement approaches and inventories that support effective mitigation actions in the waste sector. This guidance will allow for a coordinated regional approach to methane emissions quantification that will support mitigation policies and activities, including adopting best practices for methane management, such as organic waste diversion, methane capture, and leak detection and repair at landfills. This project will strengthen North American efforts and international commitments to reduce emissions and mitigate climate change impacts.

[1] E.g. Baray et al., 2021. https://acp.copernicus.org/articles/21/18101/2021/ ; Xiao Lu et al., 2022. https://acp.copernicus.org/articles/22/395/2022/acp-22-395-2022.pdf

4. **Select the strategic pillar(s) from the 2021-2025 Strategic Plan that the project addresses:**
   - ☒ Clean Air, Land and Water
   - ☐ Preventing and Reducing Pollution in the Marine Environment
   - ☒ Circular Economy and Sustainable Materials Management
   - ☐ Shared Ecosystems and Species
   - ☐ Resilient Economies and Communities
   - ☐ Effective Enforcement of Environmental Laws

5. **Describe how the project uses strategic cross-cutting approaches in its implementation: Innovative and Effective Solutions and/or Diverse and Inclusive Stakeholder Engagement and Public Participation (including gender and diversity effects and opportunities, and youth) (max 100 words).**
   This project aims to explore the potential of innovative sensing technologies to improve methane emissions quantification in the waste sector. Project activities will involve the active engagement of governmental and non-governmental organizations, the private sector, and academic institutions.

6. **Explain how the project can achieve more impact through tri-national cooperation (max 100 words):**
   This project will allow current national emissions inventories improvements and support methane mitigation strategies using a coordinated regional approach, fostering comprehensive discussions and sharing best practices for methane quantification and reduction. This tri-national collaboration will strengthen efforts to mitigate methane emissions across North America.

7. **Describe how the project complements, or avoids duplication with, other national or international work (max 100 words):**
   The project aims to identify tools and methods that can enhance the quantification of methane emissions in the waste sector. There is an opportunity for this project to improve emission quantification by leveraging information from international efforts in methane observation, such as the UNEP International Methane Emissions Observatory and WMO Global Greenhouse Gas Watch. This would complement national efforts in the three countries to improve their emission inventories. Project activities are designed to support and complement national efforts and to ensure alignment with international methane reductions commitments such as the Global Methane Pledge and the Lowering Organic Waste Methane Initiative.

8. **Describe how the project engages traditional ecological knowledge (TEK) experts or Tribal/First Nations/Indigenous communities, if applicable (max 100 words):**
   Not applicable.

9. **Describe how the project engages new audiences or partners, if applicable (max 100 words):**
   Given the alignment of project activities with international methane reduction efforts, partnerships with other local, national and international institutions will be fostered. Project results could be disseminated through scientific articles, as well as through participation in fora and conferences aimed at advancing methane emissions reductions, which would engage new audiences and interested parties.

10. **Identify the designated partner agencies or organizations committed to implementing this project, as well as other organizations that could be involved, or benefit from it, including through outreach efforts, collaborations or partnerships (e.g.: federal agencies; other levels of government; academia; NGOs; the private sector; civil society; and youth):**

Lead agencies or organizations	Country
Environment and Climate Change Canada	Canada
National Institute of Ecology and Climate Change (*Instituto Nacional de Ecología y Cambio Climático* —INECC)	Mexico
Environmental Protection Agency – EPA	United States
Department of State	United States

Other organizations/individuals (if applicable)	Country
Climate and Clean Air Coalition	International
Carbon Mapper	United States
Netherlands Institute for Space Research – SRON	Netherlands
Global Methane Hub	Chile
Global Methane Initiative	International
Global Emissions Initiative	International

Other organizations/individuals (if applicable)	Country
Clean Air Task Force	United States
Rocky Mountain Institute	United States
International Methane Emissions Observatory, Global Greenhouse Watch	International
Anja Schwetje, German Environment Agency	Germany
World Meteorological Organization	International
Methane Centre of Excellence	Canada
FluxLab - Emissions Science, St. Francis Xavier University	Canada
NASA Jet Propulsion Laboratory	United States
Methane-SAT	United States -New Zealand
Environmental Defense Fund	United States
Institute of Atmospheric Sciences and Climate Change (*Instituto de Ciencias de la Atmósfera y Cambio Climático*)	Mexico
Intergovernmental Panel on Climate Change – IPCC	International

This project will include participation from other organizations including NGOs, the private sector, and other stakeholders. Their engagement is in the process of confirmation.

11. In the following table, describe: the project objective(s) and the activities and subtasks planned to achieve the objective(s); the corresponding outputs, expected results and how they will be measured (performance measures); baselines (if known), and targets by end of the project; and the timeline and budget.

OBJECTIVE 1	**Identify alignment and gaps among bottom-up and top-down methane estimates in the waste sector in North America.**
Activity 1 **Budget C$75,000**	Document the state of the art in methane quantification in emissions from landfills in North America.
Output(s)	Identification of: - Key factors influencing the generation of methane emissions in the waste sector and specific opportunities for quantification improvements in North America; and

	- Current technologies used to improve quantification of methane emissions in the waste sector.	
Expected results, performance measures	Improvements in quantifying methane emissions in the region.	
Baseline (current status), if known	Some baseline information has been gathered in the following papers: - Risk, D. et al., 2024. Canadian Landfill Methane Project Final Report. Report prepared for Natural Resources Canada by Flux Lab, April 19, 2024. - Baray et al., 2021. Estimating 2010–2015 anthropogenic and natural methane emissions in Canada using ECCC surface and GOSAT satellite observations. https://acp.copernicus.org/articles/21/18101/2021/ - Xiao Lu et al., 2022. Methane emissions in the United States, Canada, and Mexico: evaluation of national methane emission inventories and 2010–2017 sectoral trends by inverse analysis of in situ (GLOBALVIEWplus CH4 ObsPack) and satellite (GOSAT) atmospheric observations. https://acp.copernicus.org/articles/22/395/2022/acp-22-395-2022.pdf - Daniel H. Cusworth et al., 2024. Quantifying methane emissions from United States landfills. https://www.science.org/doi/10.1126/science.adi7735 Other ongoing estimations being developed by each of the three countries will also contribute to this information.	
Target (by project end)	Opportunities for emissions inventory improvements in North America are identified.	
Sub-task 1.1	Identify the current measurement basis and parameters in each country and determine if ongoing validations and additional measurements are being conducted.	**When:** Fall 2024
Sub-task 1.2	Determine differences between reported emissions inventories and estimates based on site-based measurements.	**When:** Fall 2024
Sub-task 1.3	Establish bases for discussions with experts to identify guidelines in reconciling top-down and bottom-up inventory estimates.	**When:** Winter 2024
OBJECTIVE 2	**Produce knowledge informed by multidisciplinary expertise to improve quantification of methane emissions in the waste sector in North America.**	

Activity 2 **Budget C$250,000**	Conduct consultations with subject matter experts to identify priority sources, improvements in methane quantification in the waste sector, and value-added and mitigation actions, including: • A comparison of emission estimates derived from surface and remote sensing measurements for selected sources across North America. • Explore how multi-scale methane monitoring (on-site, drone/UAV, and satellite) and inverse modeling systems for methane emissions are being used to reconcile inventories. • Develop recommendations for tracking and documenting landfill methane emissions.	
Output(s)	Recommendations for improved methane emission quantification and measurement approaches to allow for more effective mitigation actions.	
Expected results, performance measures	The three countries can integrate recommendations and guidelines into their methane emission inventories.	
Baseline (current status), if known	N/A	
Target (by project end)	Experts' recommendations for enhancing methane emissions quantification are compiled.	
Sub-task 2.1	Convene methane subject matter experts and practitioners from various institutions in an intersectoral workshop to discuss opportunities for enhancing methane emissions quantification using remote sensing and/or site-based surface measurements and leveraging existing efforts. Discussions may include: identify existing capabilities and gaps, including barriers to the implementation of solutions; data availability, comparability, share-ability and gaps; collaboration on communication mechanisms and sharing and replication of tools, resources, monitoring; current national efforts; other topics to be defined.	**When:** Spring 2025
Sub-task 2.2	Provide recommendations and guidelines for improving quantification and reductions of methane emissions in the three countries and identify possible approaches that could be developed in each country to overcome barriers in methane quantification and reductions, including the use of existing/new remote sensing or site-based surface measurements to help inform convergence of data.	**When:** Summer 2025
Activity 3 **Budget C$75,000**	**Dissemination of results**	

Sub-task 3.1	Conduct a campaign to promote and share the project findings as a reference for regions encountering similar challenges.	**When:** Summer – Fall 2025

12. Describe <u>post-project</u> expected impacts:

Expected impact	SMART performance measure(s)
Enhancements of national methane emissions inventories, particularly in the waste sector, are integrated into North America's framework.	Evidence based on surveys that North American countries have incorporated recommendations into national emission inventories.
North American countries outline supplementary measures and necessary actions to improve mitigation of methane emissions in the waste sector.	Evidence based on surveys that North American countries are implementing additional measures to reduce methane emissions in the waste sector.